

Tmss

Turbidite sandstone (early Eocene)—45 to 150 m of well-indurated, medium- to thick-bedded, fine- to coarse-grained, graded, deep-marine turbidite lithic sandstone, rhythmically bedded, with subordinate thinner, dark gray, even-bedded mudstone; sandstone to mudstone ratio ranges from 2:1 to 5:1; some thinning- and fining-upward as well as thickening- and coarsening-upward sequences; includes a few very thick-bedded amalgamated, massive, medium-grained lithic sandstone with thin discontinuous mudstone. Burrows, load casts, grooves, and flutes on base of some beds; sandstone beds display Bouma abde, abe, and ae divisions and have sharp bottom contacts and gradational upper contacts; and contain mudstone rip-ups. Ridge-former; turbidite facies C and D of Mutti and Ricci Lucchi (1972) representing submarine mid-fan lobes and channels (Ryberg, 1984; Ryu and others, 1992). Unit is interbedded with and/or overlies units Tmm, Tmms, and Tmsm

Tmm

Basin plain mudstone (early Eocene)—Up to 1225 m of foraminifer-bearing, chippy weathering basinal mudstone, dark medium gray, laminated to massive; some calcareous concretions and thin intervals of very thin- to thin-bedded, fine-grained lithic turbidite sandstone and mudstone; forms condensed section (< 40 m thick) where unit onlaps subaerial paleohighs of Siletz River volcanics that include a basal dark brown, well-cemented basaltic sandstone (up to 35 m thick) shallow-marine and pocket beach deposits

Tmms

Mudstone and turbidite sandstone (early Eocene)—Thick, even-bedded sequences of well-indurated, deep-marine (bathyal) rhythmically bedded, thin to very thin, graded beds of medium gray, fine- to medium-grained turbidite lithic sandstone and dark gray mudstone; sandstone to mudstone ratio ranges from 1:1 to 1:4; some beds contain flute casts, grooves and burrows and Bouma bedde, abede, and cde divisions; turbidite facies D of Mutti and Ricci Lucchi (1972); outer submarine fan to basinal facies (Ryberg, 1984; Ryu and others, 1992); up to 1,000 m thick. Unit overlies and is interbedded with unit Tmss

Tmcs

Submarine fan channel sandstone (early Eocene)—230 m of well cemented, very thick-bedded, amalgamated, massive to graded, ridge-forming, pebbly, coarse-grained, deep-marine, lenticular, lithic sandstone (with Bouma aa and abe divisions) and some lenses and channels of normal and reverse graded, organized and disorganized, matrix-supported polymict conglomerate (submarine debris flow deposits) and minor thin intervals of dark gray mudstone partings and thin-bedded, lenticular sandstone; some slumped bedding. Sandstone is locally bleached white to buff near faults by hydrothermal fluids associated with mercury mineralization (Wells and Waters, 1934). Conglomerate is very poorly sorted and is composed of rounded to sub-rounded clasts of Klamath Mountains Mesozoic metamorphic, sedimentary, and volcanic rocks. Inner fan and mid fan and lower slope channel and inner fan valley (Ryu and others, 1992). Unit overlies unit Tmss and grades to the southwest into slope turbidite mudstones of unit Tmsm

Tbsc

Bushnell Rock Formation (early Eocene)— Divided into:

Slater Creek Member (early Eocene)— 640 m of well-indurated, shallow-marine, fine-grained, thick- to very thick-bedded, massive to faintly laminated, gray-green, lithic feldspathic sandstone at the top of the Bushnell Rock Formation. Contains minor dark gray mudstone partings and polymict conglomerate lenses; broken fossil mollusks, scattered pebbles, mudstone rip-ups, worm tube casts, and carbonized wood. Molluscan fossils locally abundant in bioturbated fine sandstone are referable to the early Eocene and indicate a neritic environment (L. Marincovich, written communication, 1993; Brouwers and others, 1995)

Tbr

Bushnell Rock Formation conglomerate (early Eocene)— Unit consists of three lithofacies: Submarine channel deposits - up to 500 m thick consist of well-indurated deep-marine, medium gray, pebble-cobble-boulder polymict conglomerate (mainly quartz, volcanic, and metamorphic clasts); thick- to very thick-bedded, framework-supported, graded and reverse graded; clasts rounded to sub-rounded; some debris flow deposits of sandy clay matrix-supported boulders and cobbles (unit Tbrm) and pebbly, poorly sorted, very coarse-grained, lithic sandstone; minor bathyal foraminifer-bearing, thin, dark gray, laminated mudstone interbeds and minor basaltic conglomerate at base; facies represents deep-marine submarine channels or canyon fills and upper submarine fan valley sequences (Ryu and others, 1992). Alluvial fan lithofacies - locally underlies submarine fan and canyon lithofacies and consists of up to 730 m of ridge- and cliff-forming, reddish brown, polymict fanglomerate, debris flow deposits, poorly sorted boulder-cobble-pebble conglomerate, and braided river deposits of cross-bedded to massive framework-supported conglomeratic, coarse-grained lithic sandstone (Ryu and others, 1992). Clasts are dominantly graywacke, chert, quartz, vein quartz, quartzite, phyllite, greenstone, granitic rocks, and intermediate to mafic volcanic rocks. Minor massive maroon mudstone, ripple-laminated, fine-grained lithic sandstone interbeds. A fan delta facies at top of formation consists of 75 m of near-shore, mollusk-bearing, cross-bedded, moderately sorted, pebbly, medium- to coarse-grained lithic sandstone; polymict conglomerate lenses become more abundant toward the base of this lithofacies. Formation locally contains early Eocene molluscan fossils and sparse benthic foraminifers of early Eocene age (Bulitian and early Penutian foraminiferal stages; McKeel, 1991 in Ryu and others, 1992; Brouwers and others, 1995) and coccoliths referable to biozone CP10 (D. Bukry, written communication, 1996). Unit is unconformable on both the Mesozoic Klamath Mountains terranes and Paleocene to early Eocene Siletz River Volcanics, but is syn-tectonic and in places involved in thrusting. Between Winston and Dixonville, the basal Bushnell Rock deep-marine facies (Tbr) is interbedded with submarine pillow lavas of Siletz River Volcanics and is intruded by co-magmatic diabase sills. Unit may grade laterally northward into lower part of Tenmile Formation (Umpqua Group of Ryu and others, 1992, 1996)

Tbrm

Debris flow deposits (early Eocene)— Very poorly sorted polymict boulder conglomerate containing sub- angular boulders up to 4m in diameter of greenstone, metagreywacke, chert, and basalt in a matrix of basaltic laharic breccia, interbedded with thin lenses of turbidite sandstone and siltstone

Siletz River Volcanics (early Eocene and late Paleocene)—Submarine pillow basalt, subaerial basalt, and interbedded volcanoclastic and sedimentary rocks; divided into:

Roseburg Member (early Eocene and late Paleocene)— Sedimentary units that were previously included with pillow basalt in the Roseburg Formation of Baldwin (1974); usage here is restricted to the sedimentary units.

Trs

Turbidite sandstone and mudstone (early Eocene and late Paleocene)—Indurated, rhythmically bedded, thin- to very thick-bedded, medium gray, graded lithic sandstone and subordinate thin to medium beds of dark gray foraminifer-bearing mudstone interbedded with pillow lava and submarine basaltic breccia of Siletz River Volcanics (Tsr). Sandstone beds contain Bouma abede and bedde divisions, flute clasts, grooves, burrows, load casts, and mudstone rip-ups characterisitic of deep-marine environment. Sandstones derived from Mesozoic Klamath Mountains terranes and locally from basaltic source terrane; lithologically similar to younger Tenmile lithofacies. Unit forms interbeds 10 to 100 m thick between flows and becomes the dominant lithofacies to the southwest. Mudstone contains sparse late Paleocene to lower Eocene foraminifers and coccoliths (CP 8 to 10, Ryu and others, 1992; Brouwers and others, 1995; D. Bukry, written communication, 1996).

Trc

Conglomerate (early Eocene)—Thick- to very thick-bedded, deep-marine, framework-supported, polymict poorly sorted pebble-cobble-boulder conglomerate interbedded with pillow basalt of Siletz River Volcanics and locally enclosed within pillows ; contains sub-rounded to rounded clasts of basalt, quartz, chert, metagreywacke, limestone, and metavolcanic rocks derived from Mesozoic terranes south of Wildlife Safari fault; unit is poorly to moderately sorted, reverse and normally graded, amalgamated to massive, lenticular to channelized beds

Trbs

Basaltic sandstone (early Eocene)—Dark brownish black to greenish brown, well-cemented basaltic sandstone; massive to thick-bedded, medium- to very coarse-grained, moderately to poorly sorted; locally pebbly and conglomeritic, with zeolite-filled vesicles in clasts; contains broken molluscan and echinoid fossils; interbedded with pillow basalt and locally overlying subaerial basalt; formed as shallow-marine and pocket beach deposits around subsiding oceanic island headlands and basaltic sea stacks of the underlying Siletz River Volcanics

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